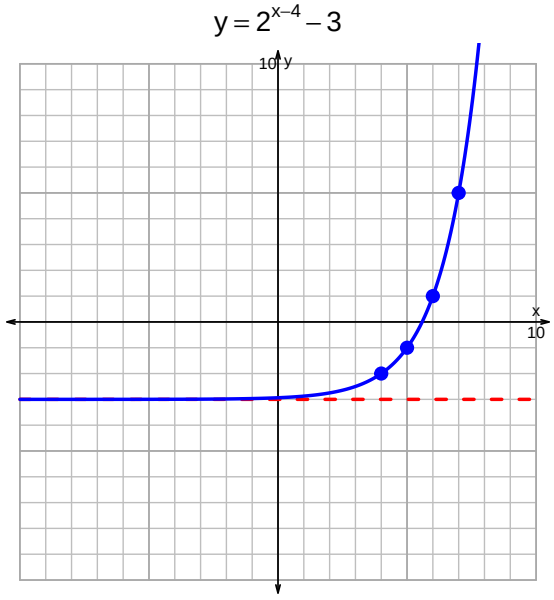
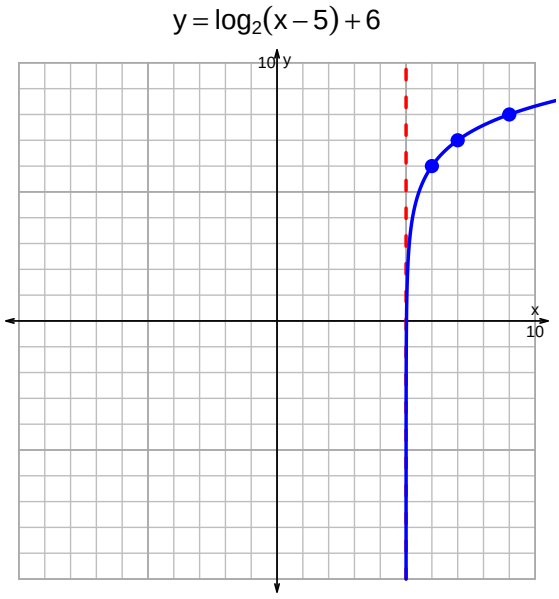
Name: Date:

S18QUIZ: EXP LOG (SLTN v256)

1. Graph $y = 2^{x-4} - 3$ and $y = \log_2(x-5) + 6$ on the grids below. Also, draw any asymptotes with dotted lines.





2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-17 = \left(\frac{-7}{4}\right) \cdot 2^{3t/5}$$

Divide both sides by $\frac{-7}{4}$.

$$\frac{17 \cdot 4}{7} = 2^{3t/5}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{17 \cdot 4}{7}\right) = \frac{3t}{5}$$

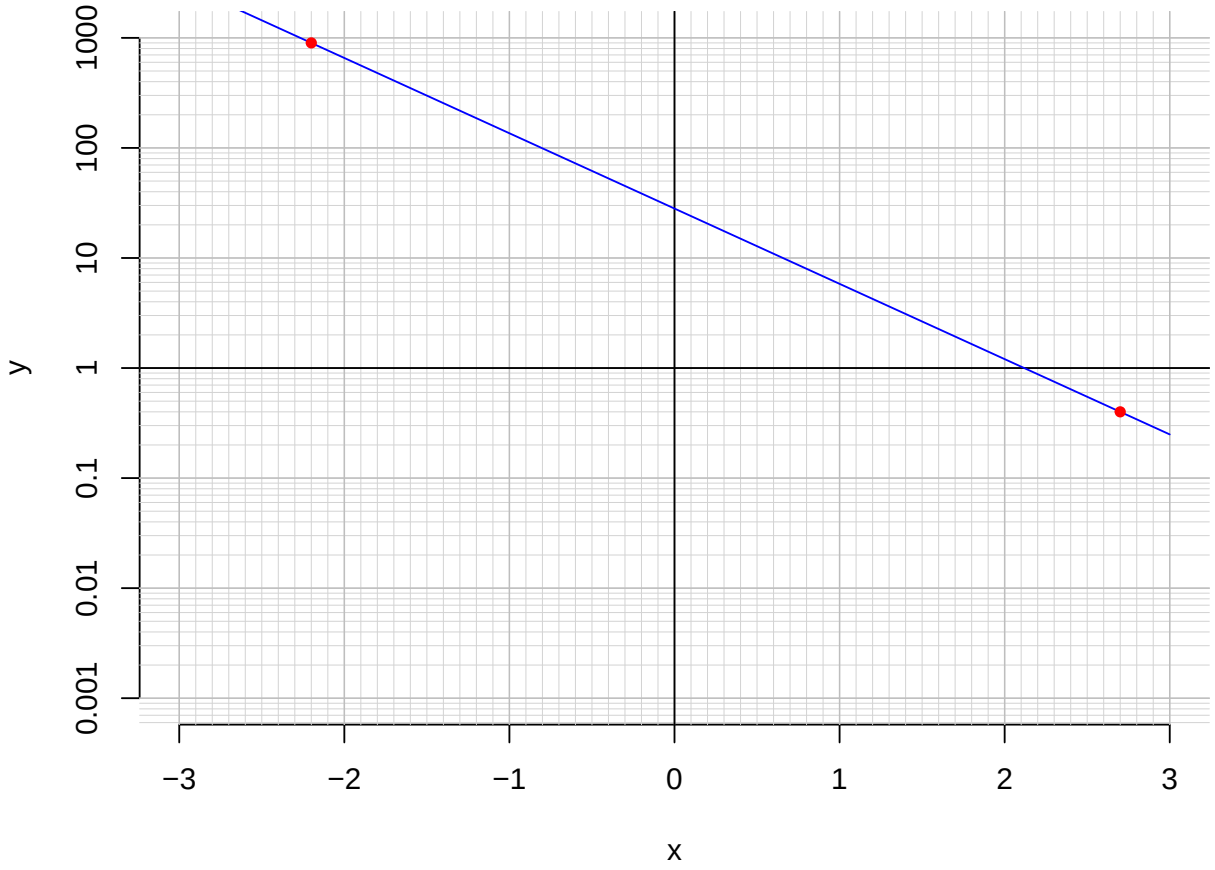
Divide both sides by $\frac{3}{5}$.

$$\frac{5}{3} \cdot \log_2\left(\frac{17 \cdot 4}{7}\right) = t$$

Switch sides.

$$t = \frac{5}{3} \cdot \log_2\left(\frac{17 \cdot 4}{7}\right)$$

3. An exponential function $f(x) = 28.1 \cdot e^{-1.58x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(2.7)$.

$$f(2.7) = 0.4$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{1.58} \cdot \ln\left(\frac{x}{28.1}\right)$$

c. Using the plot above, evaluate $f^{-1}(900)$.

$$f^{-1}(900) = -2.2$$